

Indiana.—Spiceland, Henry county: monthly precipitation, 1.81, is 0.54 below the October average for the last thirty years.

Logansport, Cass county: monthly precipitation, 3.26, is 0.51 above the October average for the last twenty-five years.

Wabash, Wabash county: monthly precipitation, 3.75, is 0.47 in excess of the October average for the last nine years.

Kansas.—Yates Centre, Woodson county: monthly precipitation, 3.83, is 0.29 below the October average for the last four years.

Lawrence, Douglas county: monthly precipitation, 2.38, is 0.54 below the October average for the last seventeen years.

Independence, Montgomery county: monthly precipitation, 4.22, is 1.00 above the October average for the last twelve years.

Wellington, Sumner county: monthly precipitation, 2.90, is 1.05 below the October average for the last six years.

Maine.—Gardiner, Kennebec county: monthly precipitation, 3.14, is about three-fourths of the October average for the last forty-seven years. For the first five months of the year the precipitation was 28.62; for the second five months it was only 12.87.

Maryland.—Fallston, Harford county: monthly precipitation, 1.48, is 1.86 below the October average for the last fourteen years.

Massachusetts.—Worcester, Worcester county: monthly precipitation, 2.34, is 2.06 below the October average for the last forty-five years. The largest October precipitation for that period, 9.81, occurred in 1869; the smallest, 0.46, occurred in 1879.

Missouri.—Saint Louis: monthly precipitation, 1.86, is 1.19 below the normal for October.

New Jersey.—South Orange, Essex county: monthly precipitation, 2.90, is 0.59 below the October average for the last fifteen years.

New York.—North Volney, Oswego county: monthly precipitation, 3.00, is 0.61 below the October average for the last thirteen years.

Palermo, Oswego county: monthly precipitation, 2.65, is 0.95 below the October average for the last thirty-one years.

Ohio.—Wauseon, Fulton county: monthly precipitation, 3.01, is about the average for October for the last twelve years.

Pennsylvania.—Dyberry, Wayne county: monthly precipitation, 2.34, is 0.86 below the October average for the last fourteen years.

Texas.—New Ulm, Austin county: monthly precipitation, 1.78, is 2.77 below the October average for the last thirteen years.

Vermont.—Woodstock, Windsor county: monthly precipitation, 2.04, is 1.69 below the October average for the last sixteen years.

Virginia.—Wytheville, Wythe county: monthly precipitation, 0.86, is 2.08 below the October average for a period of twenty years.

Variety Mills, Nelson county: monthly precipitation, 0.96, is 1.81 below the October average for the last six years.

Washington Territory.—Bainbridge Island: monthly rainfall, 6.20, is the largest recorded in October during the last seven years.

West Virginia.—Helvetia, Randolph county: monthly precipitation, 2.45, is 0.83 below the October average for the last eight years.

Wisconsin.—Madison: monthly precipitation, 4.60, is 1.57 in excess of the October average for the last thirty-one years.

SNOW.

East of the one hundred and second meridian the most southerly stations reporting the occurrence of snow during October, 1884, are in about 40° north latitude. At North Platte, Nebraska, and Allison, Kansas, snow fell on the 7th and 8th, respectively; and on the 23d snow fell as far southward as central Ohio and southern Pennsylvania. In the more north-

erly districts and in the mountain regions the dates on which snow fell during the month are quite numerous. In the several districts snow fell as follows:

New England.—At numerous stations throughout the northern part of the district on the 14th, 15th, 16th, 24th, 25th, 30th, and 31st; it was reported from scattering stations on the 13th, 18th, and 29th; on the summit of Mount Washington, 3d, 6th, 18th, 23d to 26th, 30th, 31st.

Middle Atlantic states.—At Troy, Pennsylvania, 17th; Dyberry, Pennsylvania, 18th; Chambersburg, Catawissa, Drifton, and Troy, Pennsylvania, on the 23d; Albany, New York, and Easton, Pennsylvania, 25th.

Ohio valley.—Columbus, Westerville, and New Athens, Ohio, 23d; Grampian Hills, Pennsylvania, 23d, 24th, 26th.

Lower lake region.—Of general occurrence on the 23d and 24th, and at scattering stations in western New York on the 18th and 25th.

Upper lake region.—Of general occurrence on the 22d, 23d and 24th, and at scattering stations on the 20th, 26th, 28th and 31st.

Extreme northwest.—Of general occurrence on the 20th, 21st, 26th, 27th, 28th and 31st; and at scattering stations on 22d, 29th and 30th.

Upper Mississippi valley.—Of general occurrence at stations north of Dubuque, Iowa, on the 22d, 23d, and 24th; and at Saint Paul, Minnesota, on the 31st.

Missouri valley.—At scattering stations on the 7th, 20th, 21st, 27th, and 31st.

Northern slope.—At numerous stations from 1st to 7th, 17th, 20th, 22d, 25th, 26th, 28th, 29th, and 31st.

Middle slope.—Denver, Colorado, 7th, 26th, 27th; Allison, Kansas, 8th; on the summit of Pike's Peak, Colorado, 7th, 10th, 15th, 16th, 19th, 20th, 21st, 25th, and 26th.

Southern slope.—Fort Stanton, New Mexico, 26th.

Middle plateau.—Fort Bidwell, California, 1st; Fort Bridger, Wyoming, 3d, 4th, 7th; Fort Thornburg, Utah, 31st.

Northern plateau.—Lake View, Oregon, 1st; Fort Klamath and Linkville, Oregon, 13th.

Middle Pacific coast region.—Red Bluff, California, 15th, on mountains east of station.

MONTHLY SNOW-FALLS.

[Expressed in inches and tenths.]

The following stations report monthly snowfalls of two inches or more:

Colorado.—Pike's Peak, 9.2.

California.—Summit, 21.0; Cisco, 13.0; Emigrant Gap, 6.0; Truckee, 4.0; Boca, 2.0.

Dakota.—Fort Buford, 3.3; Fort Totten, 2.5.

Maine.—Cornish, 4.0.

Massachusetts.—Rowe, 4.3.

Michigan.—Northport, 3.8; Traverse City, 3.0.

Montana.—Fort Shaw, 3.5; Fort Maginnis, 2.7; Fort Assinaboine, 2.1.

New Hampshire.—Mount Washington, 9.1; Antrim, 2.0.

New York.—Penn Yan, 3.0; North Volney, 2.2; Palermo, 2.0.

Nevada.—Otego, 4.0; Halleck, 3.0; Battle Mountain and Palisade, 2.0.

SLEET.

Fort Totten, Dakota, 28th.

Webster and Huron, Dakota, 20th.

Yankton, Dakota, 7th.

Boisé City, Idaho, 13th.

Worcester, Massachusetts, 31st.

Alpena, Michigan, 22d.

Escanaba, Michigan, 24th.

Grand Haven, Michigan, 22d, 23d, 24th.

Mount Washington, New Hampshire, 13th, 17th, 22d, 23d, 27th.

Oswego, New York, 23d, 25th.

La Crosse, Wisconsin, 31st.

HAIL.

Hail has been reported from the several states and territories, as follows:

Arizona.—Fort Apache, 6th; Prescott, 10th.
Connecticut.—Bethel, 18th; North Colebrook, 31st.
Dakota.—Fort Randall, 21st; Deadwood, 31st.
Iowa.—Guttenberg, 16th.
Maine.—Bangor, 3d; Portland and Eastport, 25th.
Massachusetts.—Heath, 12th; Taunton and Westborough, 16th; Worcester, 18th.
Michigan.—Lansing, Northport, and Port Huron, 22d.
Nebraska.—Crete, 3d; Genoa, 6th.
New York.—Auburn, Palermo, and Syracuse, 18th, 23d; Rochester, 23d.
Ohio.—North Lewisburg, 16th.
Pennsylvania.—Erie, 22d.
Utah.—Fort Thoruburg, 14th.
Vermont.—Woodstock, 18th.
Washington Territory.—Fort Canby and Olympia, 31st.

COTTON REGION REPORTS.

In the table below are given the average precipitation and the means of the maximum and minimum temperatures for October, 1884, with the October averages for the two preceding years, in the several cotton growing districts. The reports from the district of Galveston are missing.

Temperature and rainfall data for the cotton districts, October, 1884.

Districts.	Rainfall.			Temperature.								Extremes for Oct., 1884.	
	Average for Oct. of two preceding years.	Average for Oct., 1884.	Departures.	Maximum.				Minimum.					
				Mean for Oct. of two preceding years.	Mean for Oct., 1884.	Departures.	Mean for Oct. of two preceding years.	Mean for Oct., 1884.	Departures.	Max.	Min.		
New Orleans...	2.62	2.93	+ 0.31	83.4	81.3	— 2.1	64.0	56.0	— 8.0	95.0	96.0		
Savannah.....	2.60	0.47	— 2.13	81.8	84.7	+ 2.9	61.6	56.8	— 4.8	99.0	97.0		
Charleston.....	2.76	0.76	— 2.00	78.3	80.8	+ 2.5	55.5	56.8	+ 1.3	95.0	95.0		
Atlanta.....	2.26	0.46	— 1.80	75.3	81.2	+ 5.9	56.5	55.9	— 0.6	97.0	97.0		
Wilmington....	2.70	0.64	— 2.06	75.4	79.3	+ 4.4	54.3	55.1	+ 0.8	97.0	97.0		
Memphis.....	3.12	2.25	— 0.87	77.3	78.2	+ 0.9	54.6	54.4	— 0.2	96.0	95.0		
Galveston.....	4.14			83.1			61.9						
Vicksburg.....	4.68	1.40	— 3.28	80.4	81.3	+ 0.9	56.2	57.6	+ 1.4	94.0	94.0		
Montgomery....	1.77	1.19	— 0.58	81.0	83.4	+ 2.4	58.2	57.2	— 1.0	99.0	99.0		
Augusta.....	2.10	0.34	— 1.76	78.0	82.6	+ 4.6	56.7	56.9	+ 0.2	104.0	104.0		
Little Rock....	3.06	0.99	— 2.07	77.7	77.3	— 0.4	52.2	53.0	+ 0.8	95.0	95.0		
Mobile.....	2.36	1.72	— 0.64	82.0	82.1	+ 0.1	59.0	57.4	— 1.6	98.0	97.0		

WINDS.

The most frequent directions of the wind during October, 1884, are shown on chart ii. by arrows flying with the wind. In the lower Missouri and upper Mississippi valleys, the lake region, southern New England, and in the upper Ohio valley the prevailing directions of the winds were generally from southeast to southwest; in the south Atlantic and Gulf states, Tennessee, the upper Missouri valley, and on the coast of Maine they were from northeast to northwest; in the west Gulf states, middle and southern slopes they were from east to south; in the north Pacific coast region they were southerly; in California they were northerly at Red Bluff and Sacramento and westerly at the coast stations.

HIGH WINDS.

On the summit of Mount Washington, New Hampshire, the following velocities of fifty or more miles per hour were recorded: 70, n. and w., 1st; 60, n., 2d; 65, w., 4th; 65, nw., 6th; 70, nw., 7th; 68, nw., 9th; 55, nw., 10th; 75, nw., 11th and 12th; 80, nw., 13th; 60, nw., 14th; 72, nw., 15th; 64, w., 17th; 88, nw., 19th; 92, nw., 20th (maximum for month); 76, nw., 21st; 88, sw., 22d; 60, nw., 25th; 64, nw., 26th; 90, nw., 27th; 68, nw., 28th; 60, nw., 29th.

On the summit of Pike's Peak, Colorado, the following high velocities were recorded: 52, w., 4th; 68, w., 5th (maximum for month); 54, sw., 6th; 60, w., 31st.

Other stations reporting velocities of fifty or more miles per hour are as follows:

Fort Canby, Washington Territory, 56, s., 8th and 10th.
 Cape Mendocino, California, 68, s., 12th; 64, s., 13th.
 Fort Assinaboine, Montana, 60, sw., 13th.
 Sandy Hook, New Jersey, 52, nw., 18th.
 Delaware Breakwater, Delaware, 51, ne., 15th.

LOCAL STORMS AND TORNADOES.

Mannville, Sumter county, South Carolina.—A severe hail-storm occurred in this vicinity at about 8 p. m. on the 9th; the hail-stones were very large and caused considerable damage to the cotton crop.

Harrisburg, Pennsylvania.—The most destructive storm of the season occurred on the evening of the 8th; it came from the northwest, the width of its path being not more than one-half mile. Trees were blown down and several houses unroofed. In one instance the roof of a building was blown across the Susquehanna river. The duration of the storm was not more than ten minutes. On the afternoon of the 12th, a severe hail and wind storm occurred. The hail-stones are reported to have been about as large as marbles of ordinary size, and fell to a depth almost sufficient to cover the ground. The high wind caused considerable damage in the upper part of the city. The rainfall was very heavy and many cellars were flooded.

The following extract is from the "Toledo (Ohio) Evening Bee," of October 11th:

FINDLAY, O., October 11.—News has just reached here of a cyclone which passed through Van Buren township and the southern part of this county, from east to west, devastating everything in its way. The track of the cyclone is said to have been about ten rods wide, and forests, buildings, fences, corn shocks, and everything in its course, were torn to pieces and scattered far and wide. The storm-cloud was in the shape of an inverted cone, and traveled at the rate of about sixty miles an hour. After it passed, the entire township could have been crossed without laying down a fence, but, although the damage was great, there were no lives lost.

Portland, Maine.—Threatening weather and brisk wind prevailed during the morning of the 13th, the wind reaching a velocity of twenty-four miles per hour, at 11.25 o'clock. A tornado is reported to have occurred north of this place, the width of its path being very narrow. At Lewiston the storm caused damage estimated at \$5,000.

The following extract is from "Science" of November 21, 1884:

The Norwegian bark "Loveid," recently arrived in Philadelphia, reports a very peculiar squall experienced October 18th in latitude 39° 49' north, longitude 69° 5' west. During fine, clear weather, with a light breeze from the northwest, heavy banks of clouds of most threatening aspect suddenly appeared, driving in every direction. Almost immediately a heavy squall of wind and rain struck the vessel, the wind shifting quickly all around the compass. In the midst of this disturbance, which lasted about an hour, a single peal of thunder was heard, and simultaneously a bolt of lightning struck the fore royal masthead and ran down the mast to the royal yard, which was almost destroyed. The lightning, which looked like a ball of fire, then ran out on the horn of the cross-trees and "burst" with a loud report, scattering sparks all over the vessel. The barometer fell suddenly from 30.00 to 28.60, and then rose as rapidly, the weather becoming pleasant immediately afterwards. This was rather a peculiar squall, considering the locality and the season.

NAVIGATION.

FLOODS.

Scott's Hill, North Carolina: the heavy rains of the 11th, 12th, and 13th caused the streams in the surrounding country to rise rapidly, and several bridges are reported to have been washed away.

Rio Grande City, Texas: heavy rains caused the Rio Grande river to rise rapidly during the 24th; at 3 p. m. it began to overflow, and by 5 p. m. the low lands south of the city were covered to a depth of four feet. On the afternoon of the 25th the river was falling slowly, after having reached a height twelve feet above low-water mark.

Fort Stockton, Texas: rains fell daily from the 21st to 28th; on the afternoon of the 24th two adobe houses were washed away and several others were rendered unsafe.